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DATA PROCESSING

IN THE

MARINE CORPS

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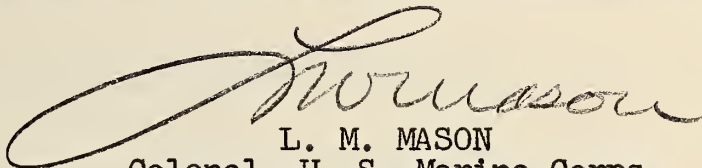
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FOREWORD

This pamphlet has been prepared as an informational medium on what the Marine Corps is doing in the field of automatic data processing.

Rather than repeat one of the many definitions of data processing, the reader's mind can best be oriented to the text by an appreciation of the data processing function. Data processing is a service function involving the accumulation, arrangement and presentation of information (data). Despite the galaxy of electronic gadgetry, nothing yet invented replaces the need for human decision-making. Data processing harnesses information and presents it in an accurate, complete and timely manner as needed in decision-making, control and planning functions.



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## DATA PROCESSING IN THE MARINE CORPS

### I. INTRODUCTION

The Marine Corps Data Processing program involves two major systems, a Materiel Management System and a Personnel Management System. Other systems within the program are treated herein as "all other". These include Fiscal Accounting, Cost Accounting, Disbursement Accounting and similar functional requirements. Also under "all other" is included machine accounting functions not directly related to a system such as production of indices, directories, reports and miscellaneous records.

### II. OBJECTIVES OF THE MARINE CORPS DATA PROCESSING PROGRAM

#### A. Primary Objective

The primary objective of the Marine Corps Data Processing Program is to provide the best possible information on resources to decision makers in order to enhance the effectiveness of the Marine Corps. Priority on output is given to top level policy makers in order to best meet the requirements of field commanders whose data processing requirements are satisfied as a by-product of the program.

#### B. Secondary Objectives

Inherent within the primary objective are the following secondary objectives:

1. Reduction of administrative burden at all echelons.
2. Maintenance of complete, timely and accurate central files.
3. Maintenance of alternate files adequate for use in event of destruction of central files.
4. Improve mobilization capability.
5. In determining feasibility for any of the above evaluate effectiveness, efficiency and economy.

## C. Systems Objectives

### 1. Materiel Management System

The objective of the Materiel Management System is to satisfy management requirements for inventory control, stock accounting and provide other information on materiel resources. This system concurrently produces information concerning materiel dollar resources. (See Appendix A for detailed objectives of the Materiel Management System).

### 2. Personnel Management System

The objective of the Personnel Management System is to satisfy management requirements for assignment, planning and historical reporting information on personnel resources. (See Appendix B for detailed objectives of the Personnel Management System).

## III. EQUIPMENT AND FUNCTIONS OF THE PRESENT INTEGRATED SYSTEMS

### A. Materiel Management System

The data processing system supporting Materiel Management extends from the requisitioning unit to the Inventory Control Point at Philadelphia. Action is initiated by the introduction of a handwritten transaction card (requisition/receipt/adjustment) into the Cardatype Accounting Machine situated at the FMF Service Unit Level. Here the card is punched and, depending upon the action required, is either completely processed at that echelon of supply or passed to the mobile installation supporting the Force Service Regiment. For non-FMF units transaction cards are submitted directly to the source of supply (MCRRD's; MCS; MCB and MCSC) for introduction into the system. Further machine processing (stock issue, replenishment and reporting actions) takes place at this point and the results sent to the computer at the Supply Center (Albany or Barstow) where the materiel management actions within the scope of the centers responsibilities are accomplished. These actions include, redistribution of located assets, replenishment of supported stock accounts from center stocks, timely notification of Inventory Control Point for emergency requirements, and updating of computer records to provide for timely Stores



and Inventory Accounting. On a monthly basis, a magnetic tape reflecting all transactions is mailed by the Marine Corps Supply Centers to the Inventory Control Point (Philadelphia) for the ultimate processing required to provide for system-wide accounting procurement, redistribution and disposal of Marine Corps Materiel resources. (See Appendix C for detailed explanation of the equipment and functions of the Materiel Management Program.

## B. Personnel Management System

The data processing system supporting Personnel Management extends from the unit level reporting a personnel change to the reflection of this change in Headquarters Marine Corps disseminated information. The unit diary originating at the unit level is passed to a data processing installation (EAM) where personnel changes are coded and punched into cards. This data is then rapidly transmitted to the electronic data processing equipment (MCB - Lejeune or Pendleton) for daily updating of the Field Master File (magnetic tape of individual personnel records of each Marine within accounting jurisdiction). Tapes of the changed records are forwarded to Headquarters each week wherein these changes are posted to the Headquarters Marine Corps Master File. All Headquarters Marine Corps reporting will be done from this Master File. Target date for production reporting from EDP System is September 1960. (See Appendix D for detailed explanation of the equipment and functions of the Personnel Management Program).

## C. Other Systems

In addition to the above major systems, smaller systems are satisfied by data processing equipment located at major commands. This equipment serves all Marine Corps systems. Functions performed by these smaller systems are: Cost Accounting, Fiscal Accounting, Civilian Payroll, Labor Distribution, Budget Preparation, Provost Marshal, Locator, and similar data processing requirements. It is at this level that greatest advantage of integration is realized; i.e. data produced as a part of one system may be used in a little different way to meet the needs of another system.

#### IV. PLANS FOR FUTURE EQUIPMENT AND INTEGRATED SYSTEMS

##### A. Materiel Management Plans

Development of new computers and components indicates that a replacement of certain elements of the File Computer (i.e., card reader punch, sort collate unit and printer) may be beneficial. If analysis shows this to be true justification will be submitted for such change. Compatible computers with increased internal speeds and faster input and output devices at equivalent rental price are now available. This change will not increase rental but will afford more computer capacity at the same price. At that time, additional applications such as production control for the repair program, requirements computation for decontrolled materiel and additional file maintenance and file purification projects will be investigated as possible applications for the added capacity.

##### B. Personnel Management Plans

1. The NCR System, without additional equipment, is capable of personnel data processing of a 4 Division/4 Wing size Marine Corps. Such a workload would require second and possibly third shift operation; however, no new or additional equipment is planned or required during FY 61 or FY 62 for personnel management.

2. Under consideration is the use of a Friden Programmatic Flexowriter to automate the preparation of IRC's at three points of initial entry of Marines into service, i.e. Quantico (officers), and the two Recruit Depots (enlisted). The anticipated savings to the Marine Corps would amortize the cost of the equipment in about 5 years. Cost analysis and benefits are discussed in Appendix E. The implementation of such a system is contingent upon the procurement of equipment at an estimated "one-time" cost of \$25,000.

##### C. Other Plans

Certain functions of disbursing accounting are suitable for machine application. These functions are currently under consideration for conversion to computer application.



# V. COSTS (O & M)

Past and projected data processing O & M costs for Fiscal Year 1958 through 1962 are provided in Appendix F. A recapitulation and explanation of the detailed cost data contained in Appendix F is as follows:

	<u>PERSONNEL MANAGEMENT</u>	<u>MATERIEL MANAGEMENT</u>	<u>OTHER DATA PROCESSING SERVICES</u>	<u>MANAGEMENT/ OVERHEAD</u>	<u>TOTAL</u>
FY 58:	\$ 306,573	\$ 499,490	\$ 352,151	\$ 727,481	\$1,885,695
FY 59:	385,903	854,936	536,205	984,796	2,761,840
FY 60:	784,099	1,318,852	612,280	1,059,169	3,738,400
FY 61:	1,202,604	1,382,367	644,176	1,110,753	4,339,900
FY 62:	1,179,804	1,333,119	620,890	1,103,087	4,236,900
<u>FY 59/60 INCREASE</u>	362,196	436,916	76,075	74,473	976,660
<u>FY 60/61 INCREASE</u>	454,505	63,515	31,896	51,584	601,500
<u>FY 61/62 DECREASE</u>	-22,800	-49,248	-23,286	-7,666	-103,000

## Explanation of above figures:

Fiscal Year 1959 increase over Fiscal Year 1958 (\$876,145) was due primarily to installation of UNIVAC File Computers at Albany (9 months), Barstow (7 months), and Philadelphia (4 months), and to necessary augmentation of existing EAM installations for support of computer operations.

Fiscal Year 60 increase over Fiscal Year 59 (\$976,660) was due primarily to first full shift operation of the 3 UNIVAC File Computers, establishment of Cardatype Facilities in FMF Service Units, establishment of a Mobile Data Processing Installation (Provisional) for FMF testing, establishment of Data Transmission Facilities for a full year, and installation of 3 NCR 304 Computer Systems for Personnel Management. Extra shift operations of the 3 UNIVAC File Computers contributed substantially to this increase.

Fiscal Year 1961 projected increase over Fiscal Year 1960 (\$601,500) is due primarily to the first full year of operation of the 3 NCR 304 Computers for Personnel Management, and the provision for a maximum of 6 Mobile Data Processing Platoons for the Operating Forces.

Fiscal Year 1962 projected decrease of \$103,000 is due to a leveling off of planned expansion, the fact that initial heavy expenditures for supplies and related equipment are not repeated, and anticipated compensating reductions of expenses in conventional EAM areas with full operation of the NCR 304 Computers and establishment of Mobile Data Processing Platoons in the Operating Forces. The reduced figures are hoped for goals established on a statistical pro rata basis at Headquarters Marine Corps. The figures were included in budget guidance given field commanders who have not yet submitted any reclama. Every effort will be made to effect a reduction of this general magnitude in Fiscal Year 1962.

#### VI. CAPACITY VS COST

	<u>Cost of Present/ Planned Utilization</u>	<u>Cost of 100% Utilization</u>
a. Total rental funds required to provide machine capacity to Operating Forces . . . . .	\$ 260,000	\$ 406,250
b. Total rental funds required to provide machine capacity to the Supporting Establishment . . .	\$1,010,100	\$1,578,281
c. Total rental funds required to provide machine capacity to Materiel Management . . . . .	\$ 996,100	\$1,556,406
	<u>\$2,266,200</u>	
d. Estimated maximum rental funds that could profitably be utilized . . . . .		\$3,540,937

(See Appendix G for explanation)

## VII. ANTICIPATED SAVINGS AND PERSONNEL REDUCTIONS

### A. Materiel Management

The justification for the additional expenditure Fiscal Year 1958 - Fiscal Year 1960 of O & M funds for the implementation of the Materiel Management System, was to provide the Commandant and his staff with the timely data required, to manage the Marine Corps Supply System. By effectively utilizing these data, more efficient management would result, which would more than compensate for the increased expenditure of appropriated funds.

The basic feasibility study (Adams Board) concluded the Marine Corps did not have nor could hope to obtain with the present procedures, equipment and manpower the minimum needs for proper supply management.

The personnel figures outlined below are presented as a comparison of the total stores system man-year expenditure at major supply activities. It is believed premature to state conclusions and to claim savings. It is significant that a more complex supply job is being performed in Fiscal Year 1960 with the present data processing system with an expenditure of 1,206 fewer man-years than under the system employed in Fiscal Year 1958. Figures for man-year availability at major supply activities follow: Fiscal Year 58 - 12,515, Fiscal Year 59 - 11,431, Fiscal Year 60 - 11,309.

### B. Personnel Management

Based on benefits to be derived from the personnel accounting application alone, it is anticipated that direct and indirect savings can be achieved through use of electronic data processing equipment. These savings fall into three general categories. They are direct monetary savings, indirect monetary savings, and improved military effectiveness. (See Appendix H for a more detailed discussion of anticipated savings for the Personnel Management Program).



## VIII. GLOSSARY

1. (ADP) Automatic Data Processing - Utilization of electronic and electro-mechanical equipment to process mass data or to solve mathematical problems.
2. (EDPM) Electronic Data Processing Machine - The electronic equipment used to process data, usually consisting of:
  - a. Console
  - b. Central Processor (Arithmetic/Logical Unit)
  - c. Magnetic Tape Handlers
  - d. Converters
  - e. Tape Controller
  - f. Hi-speed Printer
  - g. Card Reader
  - h. Paper Tape Punch
  - i. Paper Tape Reader
3. (EAM) Electric Accounting Machine - Machines designed to prepare and process punch cards and/or punch paper tape.
4. Prime Shift - That period of time during which the use of the equipment is charged and accumulated towards the total number of hours to which entitled by the basic monthly rental.
5. Extra Shift - That period of time when the use of the equipment is in excess of the number of hours covered by the basic monthly rental and which incurs extra use charges.
6. Arithmetic Unit - That component of a computer in which arithmetical and logical operations are performed. Sometimes called the central processor.
7. Console - The central control unit in an electronic computer system, through which an operator communicates instructions to or obtains information from any unit in the system.
8. (MTU) Magnetic Tape Unit - The unit which handles the reels of magnetic tape and provides the capability of reading and writing on magnetic tape.
9. Down-time - The period of time during which a computer is not in operation due to malfunctioning or machine failure.
10. On-line Operation - An operation involving the reading and/or recording of data directly to or from the computer.

11. Peripheral Equipment - Those components or units, such as printers, converters, and magnetic tape units, that are separate from and operate independently of the main frame.

12. Programming - The preparation of a plan to be followed to solve a problem. A program usually includes plans for transcribing and coding the data machine instructions and plans for the use of the results.

13. Main Frame - Synonymous with central processor. Provides the capability of storing data, processing it arithmetically or logically, and supplying the results of such processing.



## DETAILED OBJECTIVES OF THE MATERIEL MANAGEMENT PROGRAM

I. The Marine Corps Supply System is organized to accomplish the general functions of providing food, clothing, equipment, housing, and personnel payment. The execution of these functions involves the application of certain fundamental procedures of supply management. The generally applicable rules of action are:

A. Supply is a function of command;

B. Troops must be adequately supplied and resupplied in support of their assigned mission;

C. Troops must not be burdened with greater amounts of supply than is necessary;

D. Diversion of combat troops from their primary mission must be minimized;

E. Supply impetus must be from the rear toward the point of consumption;

F. Continuity, flexibility, elasticity, mobility, and simplicity without sacrifice of efficiency shall be inherent in the supply system.

II. These fundamentals of supply are applicable in varying degree under all conditions of operations. The greatest limit of variation occurs between the operating conditions of peace and war. In the interest of efficiency, supply system operation is divided into the functions of procurement, storage, accounting, distribution, issue and salvage. The fundamentals of supply, as applied through these functions, comprise the machinery with which the supply mission is accomplished.

III. The fundamentals are applied by careful planning and through the use of various supply echelons, such as inventory control points, supply centers, service elements, and organizational supply sections. There is no clear-cut line of distinction between the application of one fundamental as distinguished from another, and the application of one often brings other rules into operation. The entire supply mission is thus carried out by the interweaving and overlapping of applied fundamentals.

IV. Continuity of supply is achieved by organizing to secure supplies promptly and to maintain their flow to the user. To



maintain this flow during periods of irregularity or interruption, stock levels are created in various types, of differing sizes, and at different locations.

V. Flexibility of supply is required to conform to the varying requirements of the tactical or strategic situation, leaving the commander unhampered by supply system rigidity. The rule is applied by organizing the supply system so that it may adjust itself to unusual demands, changing situations, and unusual channels without disruption.

VI. Elasticity requires that the supply system be able to expand, contract, or be distorted without impairing its ability to return to normal. The supply system is organized to meet both the "normal" and the probable and unforeseeable expansion or contraction which may develop by designing elasticity into stock levels, facilities, and distribution patterns.

VII. Mobility is necessary in order to attain a compromise between reasonable supply certainty and necessary tactical mobility. The supply system achieves mobility by proper distribution of materiel by echelon, territorial distribution, stock location near transportation facilities, and maintenance of system capabilities to assure that materiel can be moved where and when needed.

VIII. The entire supply system is organized under the concept that supply is a function of command and that it is the duty of the commander to assure adequate supply for his command. As such, the supply system maintains a responsiveness to the exercise of this command responsibility at all levels -- from the smallest tactical units' commanders demands to the Commandant of the Marine Corps' overall, service-wide logistic requirements.

IX. Maintaining the integrity of a complete supply system which can be immediately responsive to the requirements of all organizational levels of the Marine Corps is considered a necessity. The loss of all or part of such a system is considered a threat to the capability of the Marine Corps to execute its primary mission as the nation's force-in readiness.

## DETAILED OBJECTIVES OF THE PERSONNEL MANAGEMENT PROGRAM

### I. PRIMARY OBJECTIVE

A. To provide timely, accurate personnel summary information in the required report forms.

#### 1. Discussion.

a. By "timely" is meant "within allowable time limits".

In the case of routine or periodic reports, this is determined by the length of elapsed time permitted between the end of the reporting period and the time the data must be available to the user. The earliest such report is essential near the end of the fiscal year, when it is necessary to know daily the total officer and enlisted strength on board. The allowable limit in this case is established at 24 hours from time of entry of data into the EDP system.

In the case of emergency reports, time limits are determined by the elapsed time permitted between recognition of the emergency and the time the data must be available to the user. In the most pressing case, that of emergency mounting out of a major FMF unit, the processing time limit is established at 24 hours.

b. By "accurate" is meant that the accuracy of the output data of the EDP system must be equal to or greater than the accuracy of the input data.

### II. SECONDARY OBJECTIVES

A. To ensure the availability of, and capability to use, personnel records in the event of destruction of any one record-keeping installation.

#### 1. Discussion.

To attain this objective, it is necessary that the Marine Corps have a duplicate record of that part of the individual record normally contained in the system available in useful form within the EDP system.

B. To ensure the capability of handling mobilization without additional machinery during the early period, even if one record-keeping installation were destroyed.

1. Discussion.

To attain this objective it is necessary to be able, by using additional machine time and by giving priority to personnel applications, to process, at any two installations, that data required to effect the distribution of individuals and units during the early period of mobilization.

C. To provide the maximum capability for additional service in other accounting areas to Headquarters Marine Corps.

1. Discussion.

By "maximum capability for additional service in other accounting areas" is meant the maximum practicable capability for processing applications which now appear desirable from the standpoint of efficiency, provided such capability does not conflict with the primary objective (No. 1).

D. To provide maximum service to field commands.

1. Discussion.

a. By "maximum service" is meant:

(1) Maximum reduction in reporting from the field.

(2) Minimum record-keeping in the field.

(3) Availability of machine time at Base installations for routine field use, provided such use does not delay processing required by Headquarters Marine Corps.

(4) Capability of Base installations to process anticipated emergency data requirements.



# DETAILED EXPLANATION OF THE EQUIPMENT/FUNCTIONS OF THE MATERIEL MANAGEMENT PROGRAM

## I. INTRODUCTION

A. In August 1955, a board (known as the Adams Board) for the "Determination of Accounting, Data, and Data Processing Requirements of the Marine Corps" was established. The mission of the board was to:

1. Establish the data requirements for effective Marine Corps administrative operations.
2. Determine the most economical means of developing that data; whether it should be done by manual, mechanical, electrical or electronic means.

B. Based on the approved findings of the board, another board (known as the Greene Board), was established on 23 October 1956 to "Develop an Improved Marine Corps Inventory Control System." The mission of the board was to develop an inventory control system, which would provide for the maximum exploitation of the potentials of electronic data processing equipment within the framework of a sound supply management system. In the execution of its mission, the primary objective of the board was to provide for the effective supply support of the Fleet Marine Forces and Supporting Establishment with a maximum degree of efficiency and economy. The board recognized that the effectiveness of such support is dependent upon a data processing system which not only serves the supply management needs of the Marine Corps, but also provides adequate detailed information relative to Marine Corps supply operations, and satisfies the requirements generated by the Department of the Navy, Department of Defense and Bureau of the Budget.

C. The system evolved by the boards, and currently in the process of world-wide implementation, provides an integrated Data Processing System which ties the lowest supply echelon in the data processing network to the control points at Headquarters Marine Corps and Marine Corps Supply Activity, Philadelphia. The procedures upon which this system operates are closely interrelated at all levels of supply.

D. Basically, the data processing system for supply starts at the FMF Service Units, (Division Service Battalions and Wing Service Groups) which utilize the "Cardatype" accounting machine. In the next supply echelon, the Force Service Regiment, use will be made of the capabilities of the

Mobile Data Processing Installations. At the major Marine Corps Bases and Stations, Stock Accounts are supported by the permanent Data Processing Installations. In the next supply echelon the Marine Corps Supply Centers utilize "Univac" File Computers as the medium for processing supply transactions and for reporting Stock Status and Financial data. The Marine Corps Supply Activity, Philadelphia is the terminal data processing installation utilizing the Univac File Computer. Here the stream of data is consolidated, and procurement and redistribution action and other required supply information is translated into system-wide action.

E. The cornerstone of this highly integrated system is the Single Line Item Transaction Card. This single card provides all of the basic data required to perform inventory or material accounting, financial or stores accounting and fiscal accounting through a technique of highly coding all the basic elements of data.

F. Supporting the Data Processing System is a continental data transmission system whereby the transactions which occur in the Marine Corps Stores System are transceived on a daily basis to update the Supply Center computers. The objective of this transmission system is to permit the updating of the inventory and stores records each working day and within 24 hours of the actual transaction in the supported Stock Account activity.

II. Elements of the Supply System. The various elements of the Supply System are discussed below with emphasis on the Data Processing systems which support them.

#### A. FMF SERVICE UNITS

1. These units are equipped with the IBM Cardatype Accounting Machine. This is a self-contained unit consisting of a control unit, output typewriters, card punch and arithmetic unit. The equipment has the capability of processing 600 transactions each 8 hour day. The Cardatype equipment is an integral part of the supply office, and works exclusively on supply procedures.

2. The objectives of the cardatype procedures are to:

a. Simplify the preparation and submission of requisitions by Fleet Marine Force divisional and wing units.



b. Provide more effective and expeditious supply support to using units through reduction of the manual workload and processing time in the Fleet Marine Force service units.

c. Provide for the greatest possible integration of the supply system at all levels by insuring continuity of supply functions.

d. Provide for accumulation of usage data by mechanical means at source.

e. Provide for mechanical preparation of required inventory management reports.

f. Provide for the mechanical computation of requisitioning objectives and reorder points and the automatic preparation of requisitions to the stores system.

g. Improve the service units's ability to perform basic property accounting functions with a minimum of error, work backlog and manual clerical effort.

3. The basic record of the Service Unit is the balance card. This card will be maintained in a current condition by means of change cards disseminated concurrently to Stock Account (SA) Activities. The balance card, by being subject to this control, is assured of being current with the entire supply system since all changes to the basic identifying data will be made simultaneously at all echelons in the Supply System.

## B. FORCE SERVICE REGIMENTS

It is planned that the Force Service Regiment be supported by the Mobile Data Processing Platoon. The planned operation of the Service Regiment account will be comparable to the Cardatype operation. However, since more detailed data must be processed at this echelon, more complex data processing equipment is necessary. The procedures for supply operations of the Force Service Regiment are currently under development as well as procedures for conversion of the existing manual stock records. In addition to performing the data processing for the Force Service Regiment, the Mobile Data Processing Platoon lends back-up support to the cardatypes of the Division and Wing.

### C. SUPPORTED STOCK ACCOUNT (SA) ACTIVITIES

1. Supported Stock Account (SA) Activities are located at the following commands:

Marine Corps Base, Camp Pendleton

Marine Corps Base, Camp Lejeune

Marine Corps Recruit Depot, Parris Island

Marine Corps Recruit Depot, San Diego

Marine Corps Schools, Quantico

Marine Corps Supply Forwarding Annex, San Francisco

2. These Activities carry centrally managed assets which are part of the Marine Corps Stores Account. Data generated at these Activities is processed by the permanent Data Processing Installations of the stations.

3. Commands having resident stock accounts are responsible for the following (MCO 4400.8A):

a. Maintenance of security over supplies in store.

b. Provision of warehousing and administrative space.

c. Provision of personnel within authorized ceilings.

d. Maintenance of local location and inventory records.

e. Supply support of local activities.

4. Additionally, supported Stock Account activities report all transactions affecting inventory and stores to the supporting Supply Center for updating the tape records.

### D. SUPPLY CENTERS

Marine Corps Supply Center, Barstow, California

Marine Corps Supply Center, Albany, Georgia

1. The Marine Corps Supply Center has the responsibility for supplying material to Stores Activities in the Coastal Complex and to overseas Fleet Marine Force and Security units. The Centers are connected to each other, to their supported stock accounts, and to the Inventory Control Point by a transceiver network. This system has as its objective the elimination of the need for requisitions on the Center by supported stock accounts. By daily balancing of item activity against inventory in the computer, replenishment and adjustment of stock levels will be automatic. When calculated Reorder Points are reached, necessary documents are automatically produced, directing shipment to fill stockage objectives. The system visualizes complete complex-wide inventory control, the reduction of procurement lead time, and the minimizing of on-hand inventory requirements. The Commanding Generals of Supply Centers are responsible (as set forth in MCO 4400.8A) for:

- a. Item accounting for materiel in designated financial reporting classes.
- b. Computation of materiel requirements as assigned.
- c. Redistribution of materiel which is centrally managed.
- d. Procurement as authorized by current regulations and directives.

2. In addition to the above stated requirements the Supply Centers:

- a. Perform stores accounting for Stores System assets within the Coastal Complex.
- b. Report on a daily basis to the appropriate Inventory Control Point (ICP), exceptions which cannot be solved locally.
- c. Report Coastal Complex assets on a semi-monthly basis to the Marine Corps Supply Activity, Philadelphia.

#### E. THE INVENTORY CONTROL POINTS

Marine Corps Supply Activity, Philadelphia,  
Pennsylvania

Materiel Division, Headquarters Marine Corps



The Inventory Control Point at Philadelphia is the focal point for the supply data network and provides data on Headquarters, Marine Corps controlled items as required. It is planned that the computer at Philadelphia receive a bi-weekly transaction report from the two (2) computers at the Centers and update the Master Marine Corps Inventory Records. From this bi-weekly updating, the various supply actions necessary to maintain the Marine Corps stock levels are initiated. The computer reports indicate, on an exception basis, the items for which procurement, redistribution and other corrective action is warranted. The computer permits system-wide review of requirements and informed action in which the past and planned requirements for each item of supply are considered.

III. Objectives: The implementation of the file computer system outlined herein is well advanced. Considerable progress is still required in the refinement of the data and the development of validity checks to maintain the accuracy of the tape records. The objectives and programs which particularly relate to the design of the optimum distribution system under Single Managership are discussed below.

A. Automatic shipment by Supply Center. Computation of requirements for the entire coastal complex by Supply Center computers is an accomplished fact. Force-feeding of required items to supported stock account activities of centrally stocked materiel is a daily event.

B. Improved management of locally managed materiel. Locally stock numbered and managed materiel is not now carried in computer records. It is planned that such assets be carried in tape records at a future date, with first priority being given to the computer "loading" of local requirements for the two (2) supply centers.

C. Improved management of decontrolled materiel. Centrally catalogued items which have been decontrolled for local procurement are still largely in tape records. It is planned in the near future to carry all such assets in tape records and to furnish "stock replenishment notices" to supported stock accounts when assets reach a "need-to-buy" position. This program will be in effect early in calendar year 1960.

D. Support of STORM and CLOUD Projects. Requirements and assets for the support of the STORM and CLOUD Projects are carried in tape records. Reports of materiel readiness, funding deficiencies, etc., are now possible on a system-wide basis for the first time. Additionally the capability to effect rotation and prompt issue from stock in time of emergency has been advanced.

E. Support of Repair Programs. Requirements for Fifth Echelon repair programs are currently loaded in computer records. Deficiencies of repair parts for such programs are furnished to the Marine Corps Supply Activity, Philadelphia as part of the normal inventory transaction reports. Philadelphia has the capability of procuring such requirements as part of system-wide buys of like items.

F. Improved budget preparation. The computer provides the capability to prepare stock fund budget estimates based on assets on hand, replenishable demand history, STORM and CLOUD requirements, and repair program requirements. The Fiscal Year 1960 apportionment and the Fiscal Year 1961 stock fund budget were based for the first time on computations proceeding directly from asset data in computer tape records.





DETAILED EXPLANATION OF THE EQUIPMENT/FUNCTIONS OF THE  
PERSONNEL MANAGEMENT PROGRAM

I. The program calls for three medium computers (NCR Model 304). One was installed at Camp Pendleton on 16 Jan 1960, one at Camp Lejeune on 8 Feb 1960, and the final installation to be completed at HQMC in March 1960. Rental cost of the computer system (three installations) is \$56,000 monthly.

II. Each field computer will be linked by electrical transmission to selected punched card Data Processing Installations (DPI) for the transmission of personnel change data. Magnetic Tapes of changed personnel records will be submitted weekly to Headquarters, Marine Corps by airmail (see Fig. 1&2 of this Appendix).

III. The Reserve DPI's will provide "feeder" information to the computer. It will be noted, on Figure 3, that the system for the Organized Reserve is similar to the data processing system established for the Regular Establishment. Summary information on Volunteer Reserves will be forwarded to Headquarters Computer for processing.

IV. The weekly cycle of reporting will: (1) provide summary strength reporting, (2) show distribution of personnel and (3) show the Classification and Assignment Branch the effects of their previous weeks work as well as how they stand in relation to projected strengths of units 3 and 5 months into the future.

V. At the end of each month, the Field Computers will commence preparation of the month-end "cut-off" file and at about the 10th of the month following (all changes posted for previous month), the file airmailed to HQMC for merger into the Master Magnetic Tape Record of the Marine Corps. From this file all personnel data reporting will be accomplished.

VI. Reports out of the system should be ready 25 days after the end-month "cut-off", as opposed to 45-55 days under present methods.

APPENDIX D

VII. All reporting for HQMC requirements will be done at Headquarters; thus eliminating the present method of Field DPI's preparing reports to be assembled here.

VIII. Computer gives capability to integrate personnel data processing to not only provide accurate, precise and varied reports and planning data of present requirements, but extends to include information not now available to personnel planners and managers.

IX. Planned production output is planned for September or October 1960.

APPENDIX D

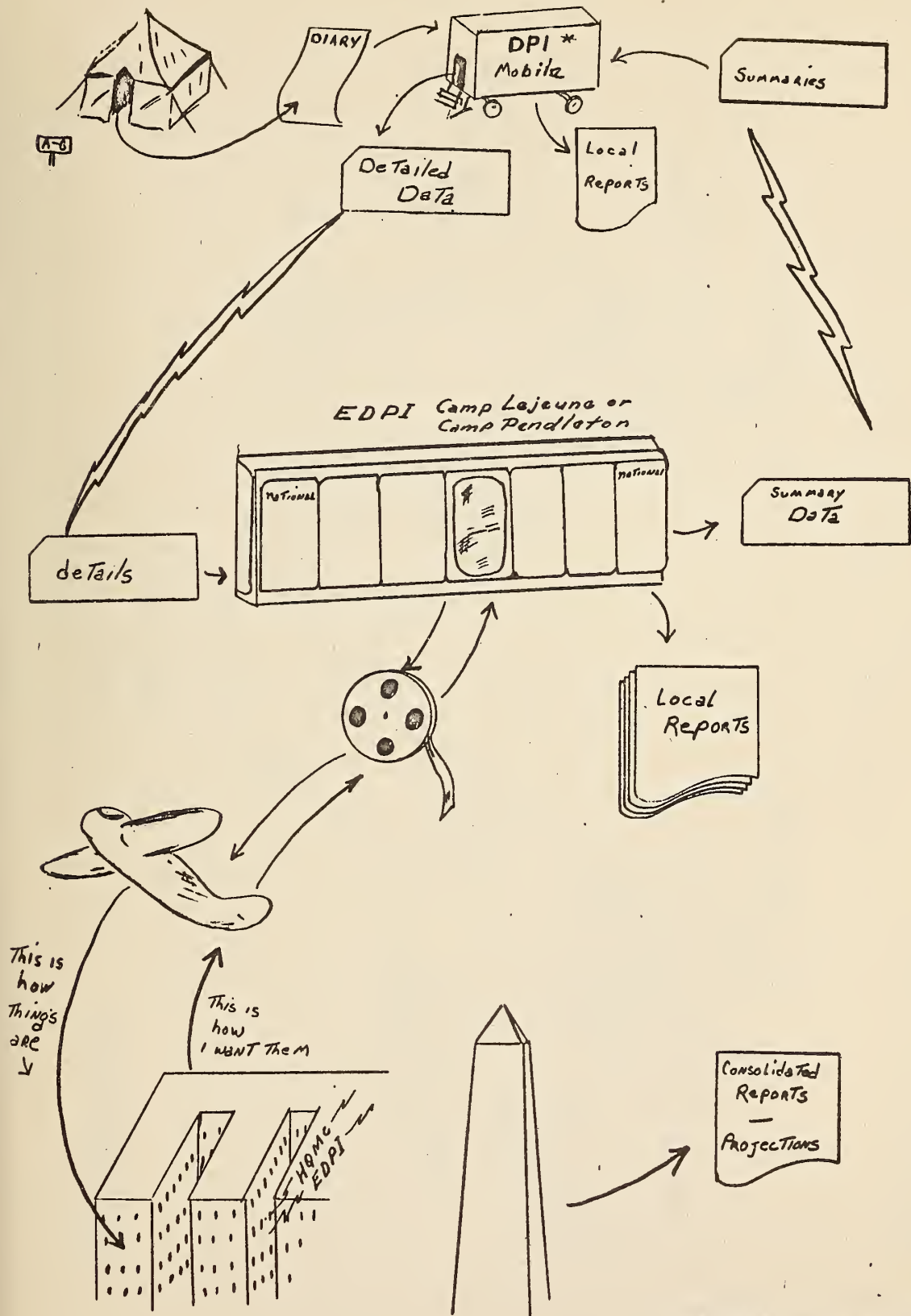


FIGURE 1

\* OR PERMANENT DPI  
(FIXED INSTALLATION)



FIGURE 2

**FLOW OF DATA**  
**ACTIVE DUTY ESTABLISHMENT**

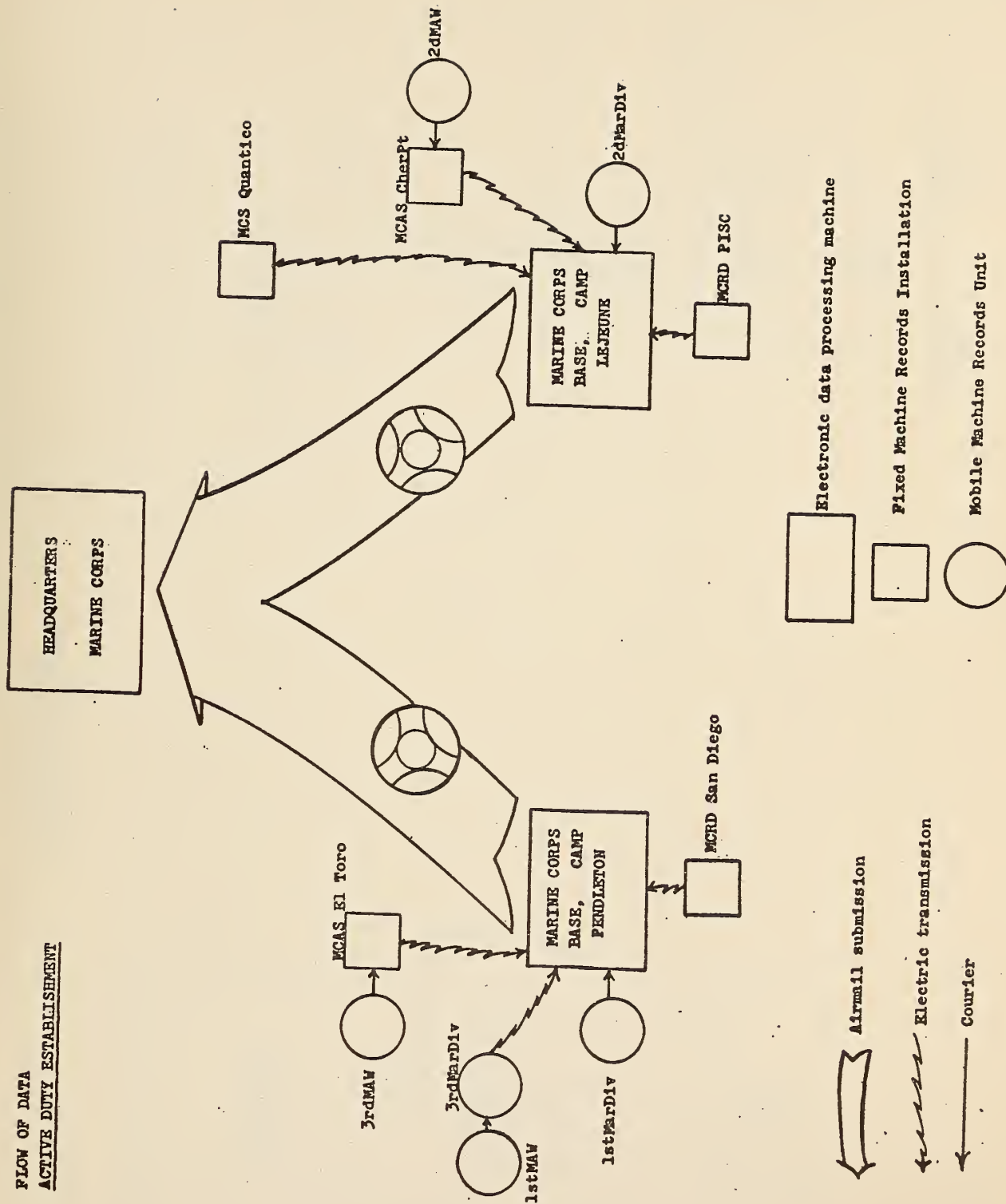


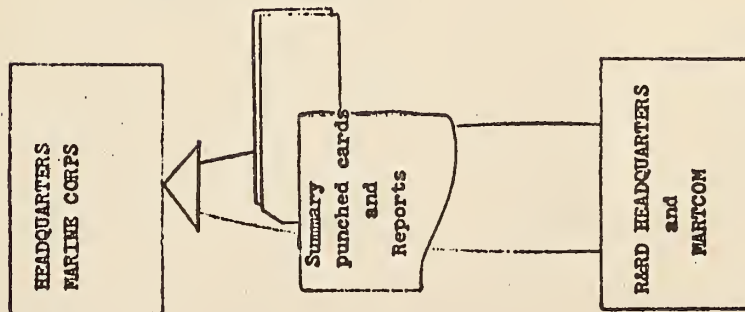




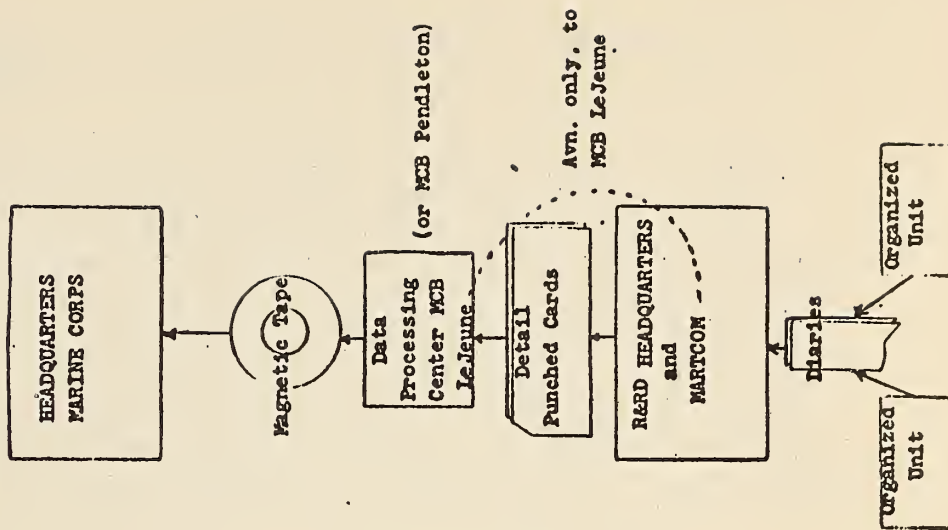
FIGURE 3

FLOW OF DATA  
RESERVE ESTABLISHMENT

CLASS III GROUND & AVIATION



CLASS II GROUND & AVIATION





DETAILED EXPLANATION OF EQUIPMENT/PLANS FOR THE PERSONNEL  
MANAGEMENT PROGRAM

The proposed use of the Programmatic Flexowriter with peripheral equipment does not change original data requirements of the Personnel Data System, but will reduce cost, improve accuracy and timeliness of gathering data for the system. This equipment will provide a means of automatically capturing data at its source; i.e., when it is first entered into the Individual Record Card (IRC) at the Recruit Depots and Basic School. The significant feature here is that subsequent key punching and verifying operations by the supporting Data Processing Installation (DPI) is completely eliminated; thus reducing the costs approximately \$5100 per year. Life expectancy of this equipment is estimated to be 10 years.

The implementation of this system of source data automation is contingent upon procurement of equipment listed below:

FISCAL YEAR 61

	<u>New Equipment Cost*</u>	<u>Equipment Rental 1 yr**</u>	<u>Total Cost</u>	<u>Cost Reduction</u>
Parris Island	\$10,000	\$ 960	\$10,960	366 Rental \$2,038 KP&V
San Diego	10,000	960	10,960	366 Rental 2,038 KP&V
Quantico	5,000	480	5,480	45 Rental 273 KP&V
	<u>\$25,000</u>	<u>\$2,400</u>	<u>\$27,400</u>	<u>\$5,126</u>

FISCAL YEAR 62

Parris Island	None	\$ 960	960	366 Rental \$2,038 KP&V
San Diego	None	960	960	366 Rental 2,038 KP&V
Quantico	None	480	480	45 Rental 273 KP&V
		<u>\$2,400</u>	<u>\$2,400</u>	<u>\$5,126</u>

\* Friden Programmatic Flexowriter w/peripheral equipment

\*\* Card Punch - IBM, Model 024 (presently in DPI's)





PAST AND PROJECTED COST ESTIMATES FOR FISCAL YEARS 1958 THROUGH 1962

		PERSONNEL MANAGEMENT 1	MATERIEL MANAGEMENT 2	OTHER DATA PROCESSING SERV 3	MANAGEMENT/ OVERHEAD 4	TOTAL 5
ACTUAL EXPENDITURES	F Y 58					
	1. Equipment Rental	\$ 141,217	\$ 224,754	\$ 195,913	\$ 432,601	\$ 994,485
	2. Civilian Personnel	105,159	66,389	71,169	288,392	531,109
	3. Supplies	60,197	208,347	85,069	6,488	360,101
	4. TOTAL	306,573	499,490	352,151	727,481	1,885,695
	F Y 59					
	1. Equipment Rental	175,235	457,322	328,369	615,691	1,577,118
	2. Civilian Personnel	123,776	92,996	81,208	356,920	654,900
	3. Supplies	86,891	304,118	126,628	12,185	529,822
	4. TOTAL	385,903	854,936	536,205	984,796	2,761,840
	F Y 60					
	1. Equipment Rental	524,862	910,425	385,562	666,651	2,487,500
	2. Civilian Personnel	132,094	120,607	89,737	375,462	717,900
	3. Supplies	91,143	287,820	136,981	17,056	533,000
	4. TOTAL	748,099	1,318,852	612,280	1,059,169	3,738,400
ESTIMATED EXPENDITURES	F Y 61					
	1. Equipment Rental	917,670	965,488	411,226	709,216	3,003,600
	2. Civilian Personnel	135,314	123,547	91,925	384,614	735,400
	3. Supplies	149,620	293,332	141,025	16,923	600,900
	4. TOTAL	1,202,604	1,382,367	644,176	1,110,753	4,339,900
	F Y 62					
	1. Equipment Rental	911,070	958,360	408,190	703,980	2,981,600
	2. Civilian Personnel	135,314	123,547	91,925	384,614	735,400
	3. Supplies	133,420	251,212	120,775	14,493	519,900
	4. TOTAL	1,179,804	1,333,119	620,890	1,103,087	4,236,900
INCREASE FY 60 OVER FY 59		362,196	463,916	76,075	74,473	976,660
INCREASE FY 61 OVER FY 60		454,505	63,515	31,896	51,584	601,500
DECREASE FY 62 FROM FY 61		-22,800	-49,248	-23,286	- 7,666	-103,000



## EXPLANATION OF CAPACITY VERSUS COST

THE BELOW ESTIMATES ARE BASED ON FY 61 PROPOSED ALLOCATION OF RENTAL FUNDS FOR DATA PROCESSING EQUIPMENT, BOTH EAM AND EDP

1. Operating Forces prime shift rental of \$260,000 provides funds for 8 hours of normal shift operations, or 40% of maximum capacity. An increase of \$195,000 to \$455,000 would provide rental funds for 100% machine capacity, based on 20 hours operation per working day.
2. Supporting Establishment prime shift rental of \$1,010,100 provides funds for 8 hours of normal shift operations, or 40% of maximum capacity. An increase of \$757,575 to \$1,767,675 would provide rental funds for 100% machine capacity, based on 20 hours operation per working day.
3. Materiel Management prime shift rental of \$996,100 provides funds for 8 hours of normal shift operations, or 40% of maximum capacity. An increase of \$747,075 to \$1,743,175 would provide rental funds for 100% machine capacity, based on 20 hours operation per working day.
4. The following is in recapitulation of the foregoing:

a. 100% machine capacity could cost	\$3,965,850
b. 40% machine capacity costs	<u>2,266,200</u>
c. INCREASED RENTAL COSTS FOR 100% CAPACITY	\$1,699,650
5. In practice, no installation will ever use ALL components for the maximum period of time. It is, therefore, considered that the additional costs cited in the foregoing should be reduced by 25%, and that such reduction would still provide for all practical purposes funds for maximum machine utilization.





## ANTICIPATED SAVINGS FOR THE PERSONNEL MANAGEMENT PROGRAM

### 1. Direct monetary savings -

The Marine Corps expects to achieve significant dollar savings through use of electronic data processing equipment for the planned Personnel Management System. The concept to be employed requires no report preparation for this Headquarters by field or Headquarters punched card equipment. The present costs attributable to this function will be eliminated, to be replaced by the cost of performing the same function on the computer. Present costs are due to master card file maintenance, summarizing operations, and report preparations, plus the mailing costs incurred by field submission of cards and reports to Headquarters Marine Corps.

Any direct savings are based on the implicit assumption that equipment and personnel now being used for Personnel Management Data Processing will actually be released. This will be true only to a degree. It is known that there are data accumulations now being made at the various Marine Corps activities which can be more efficiently accomplished by mechanical methods (EAM equipment). Some of the savings, therefore, will be of a statistical nature rather than actual monetary recovery, the difference being made up in new applications.

It should also be noted that there are a number of intangible savings which will be connected with the use of electronic equipment. Through more dependable operation of the equipment, and fewer operations on data, information received and used at Headquarters will be more accurate. This will reduce to a large degree the presently required research of personnel records for correction of errors detected in punched cards at Headquarters. This research will be further reduced by the concept of having the equipment audit reported data and make rejected changes available for correction near the source and immediately after they are originally reported.

### 2. Increased availability of manpower -

The Marine Corps necessarily expends a considerable amount of money in salaries and transportation costs for personnel who are in movement between duty stations, schools, and other duty stations. The transportation costs exceed thirty million

dollars, and the pay of personnel who are enroute under such orders is an additional seven and a half millions, approximately.

Headquarters distribution personnel issue direct orders for the movement of about three thousand personnel each month, and exercise control over delegated authority held by major commands to move such personnel as recruits amounting to an additional seven thousand movements a month. These orders, together with those issued by major commands to their subordinate units, result in an average 5500 personnel who are not carried on the rolls of any unit; that is, they are enroute between units. A five percent reduction in this figure would recover computer rental, and enable activation of an additional Weapons Company.

The average overall cost of each permanent change of station directed by Headquarters Marine Corps exceeds one thousand dollars. If the number issued could be reduced by only sixty-five monthly, computer rental would be recovered and another Weapons Platoon could be activated.

#### Improved stabilization of manpower

The movements referred to above take place between major commands. These commands, of course, have the authority to assign and reassign personnel among their subordinate units. In exercising this prerogative they cause an average 26,000 reassignments between reporting units each month.

The result of this shifting of personnel is that the "average" Marine has an average tour of duty within a major command of about eighteen months, during which time he is reassigned three times. His average tour of duty in a single unit is only four and one half months. Sometimes this is a distinct advantage; officers, serving in Fleet Marine Force commands are rotated among assignments for purposes of training them. Obviously in a great many other cases such movement is far from desirable.

If a commander would prefer to leave an assignment unchanged, but cannot, the original cause of this undesirable situation must be faulty information at some level. Information is inaccurate, too late, or missing entirely, otherwise the situation would have been foreseen and provided against. The event which forces an unwanted transfer must of course be an existing vacancy which is more critical than



the one to be created by the transfer. In other words, the personnel ordered out of the command are not matched by the personnel it receives, so that the commander must re-assess his own availability of personnel and make adjustments in their assignments.

It is not difficult to specify the information needed at Headquarters Marine Corps, in general terms. There should be available an allowance of personnel for each command or unit based not on overall numbers, but on detailed needs of the unit and on the actual population of the Marine Corps, adjusted as that population changes. These data should be projected some specified time into the future and compared with a similar projection of personnel assigned to (and ordered into) the units. This comparison would present a picture of the unit at some time in the future, provided no further action is taken by Headquarters. It would then be simple to decide if action should be taken, and much easier to determine what that action should be.

With the right kind of information available upon which distribution personnel can base their decisions, distribution personnel will make better decisions. Their actions will be more accurate, and more timely. The factors for computation of such information are available at the present, but their use on a regular basis is too time-consuming to be considered. EDPM will make such computations economically and the inevitable result will be that, insofar as overall availability of personnel will permit, each command will have continuously available to it the right kind and the right numbers of personnel. What is far more important, each will know in advance what those kinds and numbers will be and be able to plan accordingly. Under such circumstances the intra-command movement of twenty-six thousand personnel a month would be unthinkable.

#### Reduction in clerical overhead

There are 12,504 identifiable personnel administrators on active duty in the Marine Corps. A large number of clerks and First Sergeants, as well as officers, perform personnel work but carry other military occupation specialties. A reduction of about two percent in this overhead would pay the costs of equipment rental.

A significant part of the workload of administrative personnel has to do with the movement of personnel. It has been estimated, for example, that two hundred people in a single Marine Division, are primarily concerned with the strength of its units, and the movement of personnel into, out of, and within the Division.

Each transfer requires a number of entries, on a variety of different documents. Some of the entries required for detachment are: detachment and conduct marking, duties performed and proficiency marking, fitness report submission, recording the latter fact in the service record, an order to the paymaster if pay is desired, at least one entry on the Individual Record Card and often an entire new card is typed, and a Unit Diary entry which is later coded onto a punch card. There are a number of other activities which depend on the rank of the person being detached and the unit. At a conservative estimate, it would require the undivided attention of a well-trained non-commissioned officer for two hours to clear a man for transfer. Naturally this is not done; a number of personnel are involved over a much longer period, as the transferee is being physically examined, turning in company property, drawing pay, delivering orders to the paymaster, and checking out of non-appropriated fund and service facilities such as Exchange and laundry. If the man is not leaving the post, transfer is much simpler, but all of the paper work is required for every transfer. A good deal of paper work usually precedes every transfer as well, and the time of the personnel who decide upon, issue, receive, and transmit the necessary orders is considerable. Having said so much about the paper work of a transfer, no mention has yet been made of that required to record and report his arrival at a new unit.

Obviously a greater stabilization of personnel within the Marine Corps will reduce its clerical overhead requirements in addition to more easily recognizable other benefits.

### Better manpower utilization

The study of manpower utilization requires, among other things, a large mass of historical statistical data arranged in the form which will best enable senior echelons to set proper standards. Since these standards are not static, but change with the population and with better data, there is also required a mass of comprehensive data describing the current and projected status of personnel.



Collection of the required information in this area now costs the Marine Corps approximately seventy thousand dollars annually, and even so it is four to six weeks late and, because of the manual processes to which it is subject, also of doubtful validity. Electronic data processing equipment can receive and digest these data rapidly, and present them in a timely and more accurate fashion.

There is a greater advantage than the inherent economic and military advantages to improving Marine Corps manpower utilization. Properly trained and well-motivated personnel are an asset to any organization, and are better satisfied and feel more secure in their jobs. To the Marine Corps, improvement in this area--that is, the fostering of such a state of mind in its personnel--will result in increased reenlistment rates. Since it costs the Marine Corps about four thousand dollars to equip and train a recruit, enlistment quotas need to be reduced only fifteen recruits monthly, through better reenlistment experience, to completely recover computer costs.

#### Improved military effectiveness -

The objective of our personnel administration consists essentially in determining accurately the manpower requirements of the Marine Corps and in providing, within the funds available, qualified and well motivated personnel to meet these requirements. The military effectiveness of the Marine Corps depends in large measure upon how well this job is done.

Despite the traditional military excellence of the Marine Corps' fighting elements, its personnel administration is, and probably always has been, handicapped by a lack of information. Decisions made now must, of necessity, be based on data which is delayed, inaccurate, incomplete, or improperly presented. These faults are a natural result of two facts over which the Corps has had no control. Marines are stationed all over the world, and communications are such that it is difficult to assemble a complete picture representing the Marine Corps on any one day, no matter how far in the past the day may be. Secondly, the masses of data which must be generated, transmitted, received, and processed are so large, that equipment now available requires many days to bring our reporting media to a state of currency. In the process, the many hands through which the data must move and be transcribed cause the injection of human error into the system, contaminating otherwise correctly reported data.

Electronic data processing and the faster communication network which EDP makes useful and desirable will provide more accurate and more timely information which is in the most usable form, and only that information upon which action is to be taken. Better decisions, based on this better information, will improve Marine Corps personnel administration and, almost by definition, military effectiveness as well.

#### Provision of mobilization capacity -

The field computer installations have been placed at the two major Marine Corps Bases for a number of reasons, only one of which is not connected with mobilization. That reason is, of course, that the Bases are centers of the peacetime population concentrations of the Corps. Over two thirds of all Marine Corps personnel are within a few miles of these two bases.

The Marine Corps "forces in readiness" concept requires that its fighting forces be available for combat duty on short notice. Personnel shortages, however, force the assignment of personnel to Fleet Marine Forces within the United States who, short of total war, cannot be sent into combat zones. These forces, concentrated in or near the two Bases, are not at combat strength. These two factors make it essential for us to be able, quickly and accurately, to determine, by name and unit, who must be ordered out of one of these units, and what personnel will then be needed to bring it to fighting strength - as well as places where such augmenting persons are then located.

Reserve personnel ordered to active duty under mobilization will require some final training, before assignment to combat units. In the past, this has been conducted at the two Bases. Such activity greatly increases the personnel administration problem at the Bases, and its solution will be facilitated by electronic data processing.

The extent of real estate and training facilities at the two Bases make them natural selections for activation and unit training of additional combat forces, and for the assembly, formation and training of replacement drafts. This further increase in personnel administration at these Bases make it essential that all possible mechanical assistance be provided to local commanders.



With respect to personnel accounting in the large, during mobilization, the Marine Corps has relied in the past on second and third shift operation of its Machine Records Installations. The total elapsed time required to process personnel information by punched cards would very nearly double, under a doubled population. Such an increase in workload would require an additional shift of operators and supervisors, which in the case of the MRI, is a significant number of trained personnel. In the case of the electronic data processing system which is proposed, however, the proportionate increase in total elapsed time will be far less than 100%, and further, the required number of trained personnel will be much less. They can easily be provided from among the analysts and programmers who will necessarily be console operators as well.

### Provision against disaster

The threat of all out war in which nuclear weapons are utilized, requires every reasonable precaution to insure the continued functioning of the armed forces after an attack on our country. It is natural to expect that a prime target for concentrated attack would be the seat of the Federal Government, and in the event of its paralysis, adequate preparation for continued operations from another location must have been made. Military disaster accompanies any other view of the possibilities. Such an attack could be followed by public panic, revolution, or another form of chaos, and prompt action by the Armed Forces may well determine the fate of the nation.

Personnel records of all active and Organized Reserve Marine Corps personnel will, of course, be maintained on magnetic tape at Headquarters, Marine Corps. The two field installations will periodically exchange "grandfather" tape records of personnel within their own jurisdiction, so that the loss of any two of the computer installations will leave the Marine Corps with the records, and the machine capacity, to provide overall statistical and individual information on its personnel and assist in their control and utilization as the situation may require. The command post from which this control is exercised need only be placed near one of the transceiver links to the remaining computer, to receive whatever data is available rapidly and accurately.





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